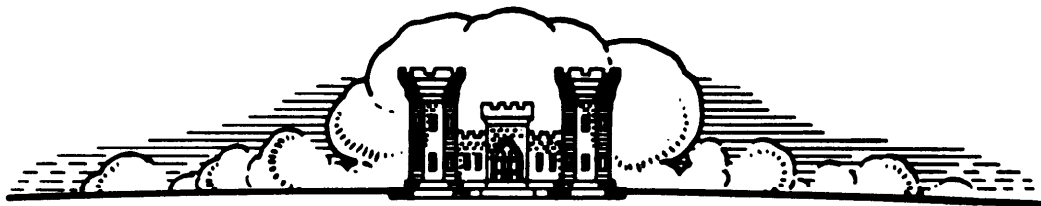


LYNN HARBOR

MASSACHUSETTS

PRELIMINARY EXAMINATION

(REVIEW OF REPORTS)



NEW ENGLAND DIVISION
CORPS OF ENGINEERS-WAR DEPARTMENT
BOSTON, MASS.

6 JUNE 1947

(NOT FOR PUBLIC RELEASE)

WAR DEPARTMENT
CORPS OF ENGINEERS
OFFICE OF DIVISION ENGINEER
NEW ENGLAND DIVISION
BOSTON 16, MASS.

NEDGW

6 June 1947

SUBJECT: Preliminary Examination (Review of Reports) of Lynn Harbor,
Massachusetts.

TO: The Chief of Engineers, U. S. Army, Washington 25, D. C.
ATTENTION: ENGWR

SYLLABUS

The Division Engineer is of the opinion that the providing of a suitable entrance from the Federal channel to the municipal channel would result in savings in transportation costs which would be passed on to the general public through cost of fuel charges. This benefit is considered to be sufficiently general in character to warrant further investigation. He, therefore, recommends a survey to determine the extent and cost of any modification that may be found justified.

AUTHORITY

1. This report is submitted in compliance with the following resolution adopted 19 March 1946, by the Committee on Rivers and Harbors of the House of Representatives, United States Congress:

RESOLVED BY THE COMMITTEE ON RIVERS AND HARBORS OF THE HOUSE OF REPRESENTATIVES, UNITED STATES, That the Board of Engineers for Rivers and Harbors be, and is hereby, requested to review the reports on Lynn Harbor, Massachusetts, submitted in House Document Numbered 1358, Sixty-fourth Congress, First Session, and subsequent reports, with a view to determining the advisability of modifying the existing project in any way at this time.

and Section 7 of the River and Harbor Act approved 24 July 1946 (Public Law 525 - 79th Congress) which reads in part as follows:

"Sec. 7. The Secretary of War is hereby authorized and directed to cause preliminary examinations and surveys to be made at the following-named localities. . . . Lynn Harbor, Massachusetts."

REPORTS UNDER REVIEW

2. The report submitted by the Department under date of 7 September 1916 and published in House Document No. 1358, Sixty-fourth Congress, First Session, was unfavorable to the request for a channel 300 feet wide from the sea to the inner harbor and an anchorage basin 500 feet square, all to a depth of 24 feet at mean low water.

3. A subsequent report, submitted under date of 3 August 1929 and published in House Document No. 7, Seventy-first Congress, First Session, recommended a channel 25 feet deep and 300 feet wide from deep water west of Bass Point, Nahant, to the head of Lynn Harbor, with a turning basin at the inner end 550 feet wide and 25 feet deep, but with straightening of the curve in the approach to the turning basin, at an estimated cost of \$912,000, with \$6,000 annually for maintenance, provided that local interests give assurances satisfactory to the Secretary of War that they will dredge and maintain a channel 25 feet deep, with suitable width, extending westerly from the Federal Channel a distance of 4,800 feet to a point about 3,000 feet westerly of the wharf of the Lynn Gas and Electric Co.

DESCRIPTION

4. Lynn Harbor, which is formed by a natural indentation of the coast line, is about 14 miles by water northeasterly from Boston, and opens into Broad Sound. It is about 3 miles long, north and south, and 1-1/2 miles wide, east and west, and a large part of it is dry at low water. The harbor is protected from east and southeast storms by Lynn Beach and the peninsula of Nahant, but is exposed to southerly storms.

5. There are two channels in Lynn Harbor, the western channel into Saugus River, 12 feet deep, and the main or Lynn Channel on the east leading to the wharves at the head of the harbor, which is 22 feet deep. The latter has a direct entrance from Broad Sound near White Rock and a second but tortuous entrance near the Nahant shore and Black Rock.

6. There is an anchorage basin for yachts approximately 200 yards wide and 400 yards long located eastward and southeastward of the turning basin at the head of the easterly channel, and extending southward from the Lynn Yacht Club.

7. The mean and spring ranges of tide in Lynn Harbor are 9.2 and 10.4 feet, respectively. No questions of water power, flood control, or other special subjects are involved. No bridges cross the main channels in Lynn Harbor, but Saugus River is crossed by four bridges having draw openings of 50 to 100 feet. The locality is shown on U. S. Coast and Geodetic Survey Chart No. 240, and on the map accompanying this report.

TRIBUTARY AREA

8. The City of Lynn is 10 miles northeast of Boston and is the largest city in Essex County. In 1940 it had a population of 98,123, with real estate valued at \$120,387,335. It is the manufacturing and shopping center for many surrounding cities and towns, principally Lynnfield, Marblehead, Nahant, Saugus and Swampscott. Although the shoe factories and their allied trades predominate numerically, the largest industry is the General Electric Company whose two plants employ more than 20,000. In 1939 there were 272 industrial establishments in Lynn, employing 12,656 persons with products valued at \$70,495,275. The principal articles manufactured at that time were footwear and related items, electrical machinery, leather and leather goods, bakery products, iron and steel products, wearing apparel and cutlery.

9. Lynn is served by the Boston and Maine Railroad and there is an excellent system of highways, with established bus and truck lines, connecting it with Boston and the surrounding cities and towns.

PRIOR REPORTS

10. Previous projects for the improvement of Lynn Harbor were authorized by the River and Harbor Acts of 2 August 1882, 11 August 1888, 13 June 1902, 25 June 1910, and 3 July 1930. The River and Harbor Act of 2 August 1882 appropriated \$60,000 for the improvement of Lynn Harbor. The River and Harbor Act of 11 August 1888 appropriated \$10,000 for the continuing improvement of Lynn Harbor, and provided that part of that sum could, in the discretion of the Secretary of War, be used at the Point of Pines and in the western channel leading thereto, and a portion in the basin inclosed by the wharves of said City of Lynn. The River and Harbor Act of 13 June 1902 authorized the dredging of a channel 200 feet wide from the sea to the anchorage basin, and an anchorage basin 500 feet by 300 feet, all to a depth of 15 feet. The River and Harbor Act of 25 June 1910 authorized the widening and straightening of the channel to 300 feet wide, and making a turning basin 500 feet square, all to a depth of 15 feet.

EXISTING PROJECT

11. The project as now maintained was authorized by the River and Harbor Act of 3 July 1930 which provides for a channel 22 feet deep and 300 feet wide from deep water west of Bass Point, Nahant, to a turning basin 550 feet wide at the head of the harbor and to straighten the curve in the approach to the turning basin. The work was completed in 1934. To date the expenditures for the above improvements amount to \$855,335.61, of which \$755,042.91 was for new work and \$100,292.70 was for maintenance.

12. The River and Harbor Act of 30 August 1935 authorized an increase in depth of the existing project to 25 feet on condition that local interests give assurances satisfactory to the Secretary of War that they will dredge and maintain the municipal channel extending westerly beyond the Gas and Electric Company wharf to the same depth and to suitable widths. The requirement of local cooperation has not been fulfilled; consequently, this Congressional authorization has not been carried into effect.

LOCAL COOPERATION

13. The River and Harbor Act of 3 July 1930 required that local interests give assurances satisfactory to the Chief of Engineers and Secretary of War that they will dredge and maintain a suitable channel of 22-foot depth extending a distance of 4,800 feet westerly from the inner end of the Federal improvement. This requirement of local cooperation was complied with.

OTHER IMPROVEMENTS

14. The Commonwealth of Massachusetts dredged an anchorage basin 8 feet deep at the upper end of the harbor at a cost of \$121,600, and spent \$184,000 in improvement of Saugus River Channel.

TERMINAL AND TRANSFER FACILITIES

15. There are 16 piers and wharves serving the Port of Lynn, generally of open pile and timber decks with stone bulkhead retaining walls and solid fill at the inner ends, and depths ranging from 4 to 22 feet. Of the 13 wharves located in the basin at the head of the harbor, 5 are used for the receipt and storage of coal and coke, with depths varying

from 6 to 18 feet, 3 of which are equipped with steam operated coal unloading towers and elevated tramways for dump cars. There are 2 privately owned and operated yacht club piers, with depths of 4 to 9 feet, one of which has a hand-operated derrick. Two of the wharves are used for the receipt of fish and lobsters, and have depths of 6 to 15 feet. One, with depths of 9 to 11 feet, is used for the receipt of lumber; 2, with depths of 6 to 8 feet, are used for the storage of stone curbing and parking cars; and the other is in very poor condition and is not in use.

16. The Lynn Gas and Electric Company owns and operates two wharves on the municipal channel, about 1,500 feet southwest of the basin, for the receipt of coal and oil. They have depths of 22 to 29 feet, and one is equipped with two movable electric cranes.

17. The remaining wharf is located on the Saugus River just above the Boston and Maine Railroad Bridge, and is owned and operated by the General Electric Company for the receipt of coal, sand and oil. It has depths of 12 feet and is equipped with a movable electric crane. This is the only wharf in Lynn Harbor having rail connections.

IMPROVEMENT DESIRED

18. A public hearing was held at Lynn, Massachusetts, on 28 June 1946 to determine the nature and extent of the modification desired by local interests, and to give interested parties an opportunity to be heard. There were present at the hearing representatives of the Department of Public Works, Commonwealth of Massachusetts, the City of Lynn, the Lynn Chamber of Commerce, the Lynn Gas and Electric Company, the New England Coal & Coke Company, the Eastern Gas & Fuel Associates, and the Fish & Wildlife Service.

19. The improvement desired by local interests is the widening of the private or municipal channel in Lynn Harbor at its junction with the main or Federal channel. The desired widening is for 75 feet on the southerly side of the municipal channel and on the westerly side of the Federal channel.

20. Local interests assert that the improvement is required due to the present trend towards the use of larger vessels. Prior to the war 7,000-ton vessels with a maximum length of about 375 feet were available and used in transporting coal to Lynn. The ships now carrying the greater part of the coal to ports along the Atlantic Coast are of 10,000-ton capacity and upward of 450 feet long. Additional space is required in navigating such vessels from the Federal channel into the municipal channel.

21. The desired improvement would assure adequate tonnage being available to the Lynn Gas and Electric Company in the larger type vessels to provide for their needs. The savings in transportation costs resulting from the use of 10,000-ton vessels would be passed on to the consumers in Lynn and vicinity through cost of fuel provisions in their contracts.

22. Local interests state that no cash contribution toward the improvement is likely.

COMMERCE

23. The principal commodities which make up the waterborne commerce of Lynn are coal and petroleum products. The tonnages handled at this port during the period 1942 to 1946 are indicated in the following tabulation:

<u>Year</u>	<u>Tons</u>
1942	263,332
1943	371,563
1944	333,990
1945	310,544
1946	344,138

VESSEL TRAFFIC

24. The following table gives the trips and drafts of vessels using Lynn Harbor in 1946:

Vessel Traffic

<u>INBOUND</u>					<u>OUTBOUND</u>			
Draft ft.	Stmrs.	Motor Vsls.	Barges	Total	Stmrs.	Motor Vsls.	Barges	Total
24 to 26	17		5	22				
22 to 24	2			2				
20 to 22			4	4			1	1
18 to 20		21	45	66			6	6
16 to 18			1	1	19		14	33
14 to 16			9	9		2	21	23
12 to 14						19	26	45
10 to 12		13	2	15			9	9
8 to 10		4	4	8				
6 to 8	16	62	8	86	16	79	2	97
4 to 6			1	1				
2 to 4								
Total	35	100	79	214	35	100	79	214
Total net registered tonnage	51,700	26,365	92,079	170,144	51,700	26,365	92,079	170,144

DIFFICULTIES ATTENDING NAVIGATION

25. There are no difficulties attending navigation using vessels up to 7,000-ton capacity. With the use of 10,000-ton vessels, great difficulty is anticipated in turning from the Federal channel into the municipal channel because of the greater length of these vessels.

DISCUSSION

26. At the present time the Lynn Gas and Electric Company is the only company located on the municipal channel receiving shipments in large draft vessels. This company, which supplies practically all the gas and electricity used in the greater Lynn area, receives about 165,000 tons of coal yearly. These deliveries have been mostly made in vessels ranging from about 4,000 to 7,500 tons in capacity.

27. It is becoming evident that vessels of the size mentioned above are being replaced with vessels of 10,000-ton capacity for economic reasons. As this development continues, it may become difficult for the Lynn Gas and Electric Company to secure the smaller type vessel used in the past. Vessels of 10,000-ton capacity are of such length, about 450 feet, that they can be navigated from the Federal channel to the municipal channel only with considerable hazard of striking the banks in making the

turn. It is to remove this hazard that local interests desire the widening of the municipal channel.

28. The proposed modification of the project by easing the entrance into the municipal channel would be beneficial since it would allow the delivery of coal in larger colliers than are currently being used. The cost per gross ton for transporting coal is less for a 10,000-ton vessel than for a 7,000-ton vessel and consequently the cost of the coal alongside the wharf would be decreased. Cost of fuel clauses in the established rates for the Lynn Gas and Electric Company are such that the savings would be almost entirely passed on to the various consumers.

29. The Lynn Gas and Electric Company provides service to Lynn, Nahant, Saugus and Swampscott. Consequently the savings in transportation costs of the coal would be widely distributed both to residential users and to many industrial plants in the territory.

CONCLUSIONS

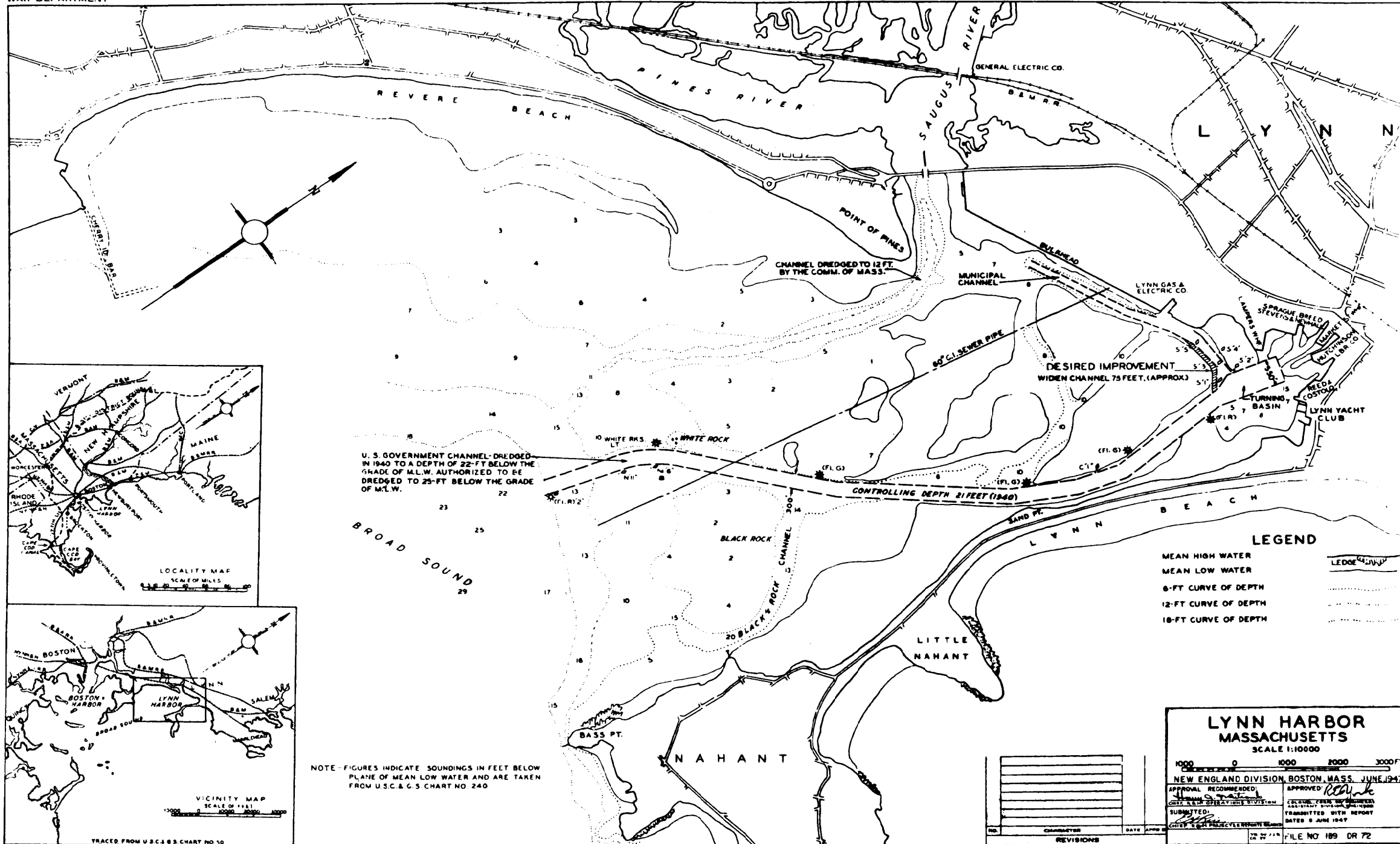
30. The desired improvement would require the modification of the present requirements of local cooperation and the assumption by the Federal Government of the obligation to provide a suitable entrance to the municipal channel. It appears that the improvement would result in a saving in the cost of transporting coal and this saving would be largely passed on to the consumers. Therefore it is believed that the improvement would result in benefits sufficiently general in character to warrant further investigation by the Government.

RECOMMENDATION

31. In view of the above, the Division Engineer recommends that a survey be made of Lynn Harbor, Massachusetts, to determine the cost and the extent of any improvements which may be found to be justified.

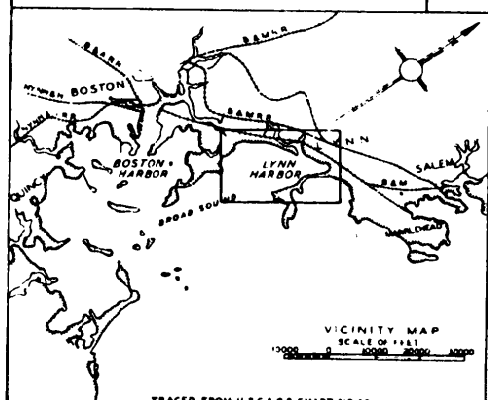
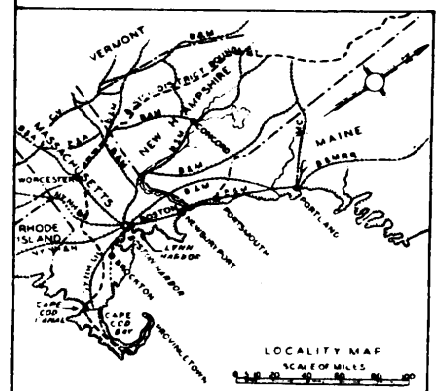
R. G. MOSES
Brigadier General, U.S.A.
Division Engineer

Inclosure:
Map



U.S. GOVERNMENT CHANNEL DREDGED IN 1940 TO A DEPTH OF 22-FT BELOW THE GRADE OF M.L.W. AUTHORIZED TO BE DREDGED TO 25-FT BELOW THE GRADE OF M.L.W.

NOTE - FIGURES INDICATE SOUNDINGS IN FEET BELOW PLANE OF MEAN LOW WATER AND ARE TAKEN FROM U.S.C. & G.S. CHART NO. 240



TRACES FROM U.S.C. & G.S. CHART NO. 10